B7

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/554,882	05/22/2000	TAKEHARU ETOH	0020-4711P	9174

2292 7590 10/06/2004

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
HERNANDEZ, NELSON D	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/554,882	ETOH ET AL.	
	Examiner	Art Unit	
	Nelson D. Hernandez	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18-23 and 27* is/are allowed.

6)☒ Claim(s) *1,3,5,12,13,25 and 26* is/are rejected.

7)☒ Claim(s) *8, 16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed June 14, 2004, with respect to claims 1, 6, 8, 12, 14 and 16 have been fully considered but they are not persuasive.

Applicant submits that Etoh fails to teach or suggest the claimed read-out line for each of longitudinal sections of the electric signal recorders, the read-out line being used for directly reading the electric signals out of said longitudinal sections of the electric signal recorders. Examiner respectfully disagrees, Etoh teaches in fig. 6 the storage/read-out lines 24A-24F being used for directly reading-out the electric signals out of said longitudinal sections of the electric signal recorders by the charge storages 33. Examiner agrees with applicant in the sense that the electric signals stored in each of the longitudinal sections are read-out without passing through other transfer paths (e.g, other CCDs) specialized for reading out. However, it is noted that the features upon which applicant relies (that the electric signals stored in each of the longitudinal sections are read-out without passing through other transfer paths (e.g, other CCDs) specialized for reading out) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

2. Applicant's arguments, see page 29, line 18 – page 31, line 22, filed June 14, 2004, with respect to claims 17, 18, 19, 21, 23 and 27 have been fully considered and are persuasive. The rejection of claims 18, 19, 21 and 27 has been withdrawn.

3. Applicant's arguments, see page 28, line 15 – page 29, line 16, filed June 14, 2004, with respect to the rejection of claims 7, 15 and 24 under 35 USC § 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of newly found prior art reference. See rejection below.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 5, 12, 13, 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Etoh, US Patent 6157408.

Regarding claim **1**, Etoh discloses a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein said electric signal recorders are linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading the electric signals out of a light perceptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Regarding claim **3**, Etoh discloses connectors (Figs. 7: 31, 8: 31, 9: 31, 14: 31, 15: 31, 16: 31) for directly connecting the signal converters with the read-out lines without passing through the electric signal recorders by teaching a sensing/monitoring mode where signals are directly transmitted to a brightness monitoring means (Fig. 3: 13) via the signal discharge line (Fig. 3: 31) (Col. 19, line 44 – col.20, line 32).

Regarding claim **5**, Etoh discloses that the electric signal recorder is a charge coupled device type electric signal recorders (Col. 4, lines 15-35).

Regarding claim **12**, Etoh discloses a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an intensity of electromagnetic waves or particle streams, and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output form corresponding signal converters, wherein the electric signal recorders are linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading out the electric signals out of a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Regarding claim **13**, Etoh discloses that the electric signal recorder is a charge coupled device type electric signal recorders (Col. 4, lines 15-35).

Regarding claim **25**, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14

and 22) for storing electric signals output from corresponding signal converters, wherein said electric signal recorders is linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading out the electric signals out of a light perceptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Regarding claim **26**, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an intensity of electromagnetic waves or particle streams, and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output form corresponding signal converters, wherein the electric signal recorders are linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading out the electric signals out of a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh, US Patent 6157408 as applied to claims 1 and 12 above and further in view of Tanaka, US Patent 6674470 B1.

Regarding claims **6** and **14**, Etoh discloses substantially the same as recited in claims 1 and 12, but does not disclose that each electric signal recorder is a MOS type electric signal recorder.

However, Tanaka teaches a MOS-type solid state imaging device (Fig. 7: 30-1-1) comprising an amplification transistor (Fig. 7: 94) for amplifying the charge signal transferred from the photodiodes (Fig. 7: 92a and 92b) to be stored by the clamp capacitors (Fig. 3: 56-1 and 56-2). (Col. 7, lines 32-55 and col. 8, lines 6-16).

Therefore taking the combined teaching of Etoh in view of Tanaka, it would have been obvious to modify the high speed imaging sensor in Etoh by interchanging the signal converters with a MOS-type solid state imaging device having an amplifying transistor for amplify the signal collected by the photodiodes to transfer said signal to storages capacitors. Doing so would help the high-speed image sensor to have lower power dissipation and smaller system size at the expense of image quality and flexibility.

4. Claims 7, 15, 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh, US Patent 6157408 in view of Moon, US Patent 6,091,091.

Regarding claims **7** and **15**, Etoh discloses that each of the signal converters is divided into a plurality of portions (Figs. 3, 7, 8 and 15) (Col. 13, lines 37-58; col. 19, lines 10-24). Etoh does not explicitly disclose that said portions are insulated from each other.

However, Moon teaches an imaging device (Fig. 4), wherein each signal converter (Fig. 4: 41) is divided into a plurality of portions insulated from each other by a channel stop layer (Fig. 4: 43) (Col. 3, lines 20-46).

Therefore, taking the combined teaching of Etoh in view of Moon as a whole, it would have been obvious to one of ordinary skill in the art to modify Etoh by having the signal converters separated from each other by a channel stop layer. The motivation to do so would prevent the generated signal charge from overflowing into the neighboring pixel and thus, mixing as suggested by Moon (Col. 3, lines 20-31).

Regarding claims **24** and **28**, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a high speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output form corresponding signal converters, wherein each of said signal converters is divided into a plurality of portions (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61; col. 13, lines 37-58; col. 19, lines 10-24). Etoh does not explicitly disclose that said portions are insulated from each other.

However, Moon teaches an imaging device (Fig. 4), wherein each signal converter (Fig. 4: 41) is divided into a plurality of portions insulated from each other by a channel stop layer (Fig. 4: 43) (Col. 3, lines 20-46).

Therefore, taking the combined teaching of Etoh in view of Moon as a whole, it would have been obvious to one of ordinary skill in the art to modify Etoh by having the signal converters separated from each other by a channel stop layer. The motivation to

do so would prevent the generated signal charge from overflowing into the neighboring pixel and thus, mixing as suggested by Moon (Col. 3, lines 20-31).

Allowable Subject Matter

5. Claims **18-23** and **27** are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: prior art of records, neither anticipates nor renders obvious the limitations of having a center line of each said electric signal recorder, in a direction from one position where electric signals are input from a signal converter to another position where electric signals are input from an adjacent signal converter, is inclined with respect to a line connecting two of the signal converter, adjacent to each other in an extension direction of the recorders, to corresponding electric signal recorders..

Regarding claims **18** and **27**, Etoh, US Patent 6,157,408 discloses a high speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein said signal converters are disposed in all of square or rectangular frames in a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61). Etoh also teaches in fig. 20 one of the center lines of the recorders S1-S9 being obliquely slashed and placed. However, Etoh does not teach or suggest that a center line of each said electric signal recorder, in a direction from one position where electric signals are input from a signal converter to another position where electric signals are input from an adjacent signal

converter, is inclined with respect to a line connecting two of the signal converter, adjacent to each other in an extension direction of the recorders, to corresponding electric signal recorders.

7. Claims **8**, **16** and **17** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Because a new ground for rejection is being applied to substantively unamended claims, this action will be Non-Final.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (703) 305-8717. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez
Examiner
Art Unit 2612

NDHH
September 29, 2004

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600